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HENRY C. CAREY'S ATTITUDE TOWARD THE RICARDIAN THEORY OF RENT

SUMMARY

Carey's four arguments against Malthusianism, 644. — Effect of environment on his thought, 647 — Relationship of wealth, utility, capital, value, and cost of reproduction, 648. — The two arguments on rent: (a) Land is capital, rents grow proportionately less; (b) The natural order of cultivation, 651. — Three possible interpretations of Carey on returns, 659. — An argument by the writer on interrelationships in the problem of proportionality, 666. — Carey and Ricardo on returns, 669. — Conclusion, 671.

THE Ricardian theory of rent met an earnest, honest, and forcible critic in H. C. Carey. Carey was radical, bold, sweeping, and dogmatic. He made a spirited tilt against Ricardian rent and seemed in his happiest vein when replying to his dearest foe, Mr. Malthus.

The purpose of this paper is to present briefly Carey's theory of rent and to contrast the views of these famous economists, especially on diminishing returns. The present writer finds, contrary to the general opinion, that Carey never denied the theory of diminishing returns in the sense that Ricardo taught it.

In order to follow Carey's criticism of Ricardian rent I shall briefly review Carey's arguments on population. Carey overlooked the social phenomena that followed the Second Hundred Years' War between England and France. He claimed that the origin of the theory of population that Ricardo had in mind, Malthusianism, was to be found in the commercial policy of England.¹ Following in the lead of the

¹ Carey, *Principles of Social Science* (Philadelphia, 1888), vol. i, p. 464.

American economists, Rae,¹ Wayland,² Vethake,³ Cardozo,⁴ and Phillips,⁵ also Senior⁶ in England, Mr. Carey argues at length to prove that Malthus' geometrical and arithmetrical ratios are impossible.⁷ God in his all-goodness, reasons Carey, provides for man. He admits that men perish. This, however, is not due to the niggardliness of nature, but to the insufficiency of men.⁸

Chemistry teaches, he argues, that a dense population is necessary for the well-being of man.⁹ Space will not permit a full presentation of his arguments under this head of his discussion. Because of the increase in population, the growth of association, capital, and skill, which result, will cause the land to yield more food; and by reason of a law of substitution which accompanies the advancement of civilization, man comes to have less need for the products of the land. Man becomes more and more dependent on plant life. Plants, on their side, must have carbonic acid gas, which is furnished them by the breath of animals. A dense population will supply the needed animal breath, and animals, a discordant element in his principle of association, will gradually disappear. Thus, man producing the carbonic acid gas and plants the oxygen, give us an example of that "perfect" economic harmony which runs through his writings.

Carey's last and most important argument is that

¹ Rae, John, *The Sociological Theory of Capital* (N. Y., 1905), p. 392

² Wayland, F., *Elements of Political Economy* (Boston, 1859), p. 302

³ Vethake, Henry, *The Principles of Political Economy* (Philadelphia, 1838), p. 116

⁴ Cardozo, J. N., *Notes on Political Economy* (Charleston, S. C., 1826), pp. 35-36.

⁵ Phillips, Willard, *A Manual of Political Economy* (Boston, 1828), p. 139

⁶ Senior, N. W., *Two Lectures on Population* (London, 1831), Lec. II, pp. 46-52.

⁷ *Social Science*, vol. III, p. 267, and *ibid.*, pp. 349-350.

⁸ *Ibid.*, p. 350.

⁹ *Ibid.*, pp. 319-320. Cf. *ibid.*, vol. II, p. 269 — vol. III, pp. 315-318, 325-327.

man's cerebral and reproductive functions become antagonistic through development. Population is self-regulative. The power to maintain individual life and the power to propagate the species must vary inversely if over-population be avoided. If a race continues to exist, the forces destructive of it and the forces preservative of it must tend toward equilibrium.¹

In this argument we find Carey's ultimate check to over-population. To read only his first three arguments, one concludes that Carey had in mind no conceivable limit to the propagation of man. Economic historians have, for the most part, overlooked his claim that population is self-regulative. Professor Roscher, for example, maintained that Carey had in mind no check to over-population and cited Carey's *Past, Present, and Future* and *Principles of Social Science* to substantiate his contention.² It is true that when, in 1848, he wrote his *Past, Present, and Future*, he had not developed the argument and frankly stated that "the time may arrive when the world will be so fully occupied that there will not be even standing room."³ But between 1848 and 1858-59, the date when he brought out his *Principles of Social Science*, appeared Herbert Spencer's famous article on population⁴ (1852), which supplied Mr. Carey with an ultimate check to over-population, thus rounding out his theory.⁵ Carey's argument is that there is no minimum of subsistence margin, nor any over-population problem.⁶

¹ *Op. cit.*, vol. III, chap. 46.

² Roscher, *Principles of Political Economy* (Chicago, 1882), sec. ccclxi, note 1.

³ *Past, Present, and Future* (Philadelphia, 1848), p. 77.

⁴ A Theory of Population, deduced from the General Law of Animal Fertility, *Westminster Review*, April, 1852.

⁵ *Principles of Social Science*, chap. 46.

⁶ Professor Haney says that Carey preceded Spencer in this theory — *History of Economic Thought* (N. Y., 1911), p. 247. Professor R. E. Thompson also makes this mistake — *Stoddard's Encycl.*, Amer. supplement to *Encycl. Brit.*, vol. I, p. 722.

In connection with these arguments it may be noted that Carey's American environment was not in conformity with the Maltho-Ricardian formula. Carey wrote voluminously on economic subjects from 1835 to 1879. The achievements of this period in American industrial history were unprecedented. The growth of population and wealth, of factories and industries, of invention and skill was immense in the development of material civilization. During the twenty years following 1830, our railroad mileage grew from 23 miles to 9,021 miles, and the railroad centre was Philadelphia, where lived Carey and most of his American followers. The growth of the agricultural industry was rapid because of superior methods and inventions, increasing population, and manufactures which furnished home markets, good prices for farm products, and division of labor and skill. With the growth of capital and the increase of population was acquired power that enabled society to appropriate the low and swampy but more fertile lands of the valleys.

Conditions encouraged Carey's native optimism, and he gave out the opinion that progress was the normal law of economic life. For the orthodox concept of diminishing returns he substituted the concept of increasing returns over a long period of time. He reversed the order of cultivation as taught by Ricardo. His writings reflect his environment. There was not a time during his career when a larger population would have been undesirable. Increasing numbers were an indication of prosperity. Considering these facts in conjunction with his native optimism, we have a reason for his denial of Malthusianism. That Carey was ultra-optimistic is generally recognized, and I have mentioned this as a reason for his opposition to the teachings of Malthus and Ricardo. Differences

of opinion often find their origin in differences of temperament. The scientist, as such, reaches conclusions only through impersonal reasoning. Man, considered as man, too often has his conclusions biased by his own temperament. The difficulty is that the scientist and the man are inseparable. There being two sides to most questions, there is opportunity for the human element to load the evidence in favor of this contention or that. Ricardo was pessimistic, Carey was optimistic. Ricardo loaded the evidence by the English conditions of 1815; Carey loaded the evidence by the American conditions of 1848.¹ Having mentioned his arguments on population, as well as the industrial and personal conditions that influenced them, I shall follow his approach to the rent problem a little further by briefly presenting certain concepts that are of the substance of the problem itself.

Carey, as we shall see, regards land as a form of capital, and makes rent virtually synonymous with interest.² Rent and interest find their origin in the conflict, so to say, between the power of nature's control over man and the power of man's control over nature. In proportion to other shares of the *distribuendum*, rent and interest are high when nature's control is stronger and low when man's control is stronger.

Concepts having to do with man's control over nature are wealth, utility, and capital. "Wealth

¹ The following references help one to appreciate the attitude of early America on population. —

(a) Franklin, A Select Collection of Scarce and Valuable Economical Tracts (ed. by J. R. McCulloch. London, 1859), p. 215

(b) Smith, Adam, Wealth of Nations (Cannan ed.), vol. 1, p. 72

(c) Everett, A. H., New Ideas on Population (Boston, 1826), chaps. 2-3.

(d) Senior, N. W., Two Lectures on Population (Oxford, 1828 — printed London, 1831), p. 49.

(e) Marshall, A., Principles of Economics, 1910, pp. 321-322, note

² Principles of Political Economy (Philadelphia, 1837), vol. 1, pp. 129, 130

consists in the power to command the always gratuitous services of nature.”¹ “Wealth grows with the growth of man’s power over nature. The more that growth the more feeble becomes nature’s resistance, and the greater is the tendency toward acceleration of progress in the further growth of wealth.”² “The utility of things is the measure of man’s power over nature.”³ “Capital is the instrument by means of which that mastery is acquired.”⁴ In what does capital consist? Carey says, “At one moment in the form of food; at another, in that of physical and mental force; and, at a third, in that of bows, arrows, canoes, ships, lands, houses, furnaces, and mills.”⁵ He speaks of “further accumulation of capital in the form of that higher intelligence.”⁶ Capital, then, is both objective and subjective. Carey is obscure on this point. He considers interest a payment for the use of capital. Land is capital, so it would seem that a payment for the use of land would be interest. Rent, however, is spoken of as a payment for the use of land; so rent and interest would be the same,—interest on land would be rent. Man also is capital. Why, then, would not wages be interest? Wages

¹ *Principles of Social Science*, vol 1, p 186 In his miscellaneous works the article “Wealth of What does It Consist?” The term thus “Wealth consists of the power to command the services of the always gratuitous forces of nature” (pp 5–6). Further, “Of all tests of the growth of wealth the most certain is that which is found in the comparative power of a people for the production and consumption of iron” (*Ibid*, pp. 10–11.) His environment in Philadelphia possibly had something to do with his exalted opinion of the iron industry and his advocacy of protection. The poet Bryant thought Carey’s opposition to orthodox economy was due to mercenary motives. (Carey’s miscellaneous works — article, *Financial Crises their causes and effects*, Bryant quoted pp 15–16) T. E Leslie thought Carey’s economy as much a product of Pennsylvania as was its iron and coal (*Fortnightly Review*, vol xxxiv, 1880, p. 503) Professor Perry was of the same opinion as Leslie (*Political Economy*, 18th ed., p 83)

² *Miscellaneous Works Article*, “Wealth of What does It Consist?” p. 11.

³ *Principles of Social Science*, vol 1, p. 179.

⁴ *Ibid.*, vol. in, p. 50.

⁵ *Ibid.*

⁶ *Ibid.*

and interest, however, are regulated by different laws. They move up or down in opposite directions. These remarks are justified by statements throughout his works and by criticisms of him on his confusion of terminology.

Concepts having to do with nature's control over man are value and cost of reproduction. "Value is the measure of the resistance to be overcome in obtaining those commodities or things required for our purposes — of the power of nature over man."¹ In the same chapter we are told that the idea of value "is simply our estimate of the resistance to be overcome, before we can enter upon the possession of the thing desired."² This chapter contains expressions of which the following are characteristic; "what are the things to which he attaches the idea of value?" "He attaches no value to the light," "How much is the value he attaches to the chair upon which he sits?" etc., etc.

One of the above definitions is subjective and the other objective. The relative values of commodities are determined by their labor cost of reproduction. "In exchanging, the most obvious mode is to give labor for labor."³ For short, value : value : : labor cost of reproduction : labor cost of reproduction.⁴

His greatest confusion comes from attributing value to man. Of the utility of man he says, "The greater that utility, the higher is his own value, and the less that of the things he needs. The cost of reproduction

¹ *Principles of Social Science*, vol. 1, p. 158.

² *Ibid.*, p. 148.

³ *Ibid.*, p. 151

⁴ Marshall makes Carey's value a money cost of reproduction concept. Carey himself, on the value of a good, spoke of the human effort required for its reproduction (Cf. Marshall, *op. cit.*, p. 401, Carey, *Principles of Social Science*, vol. 1, p. 151.) Marshall says normal cost of reproduction and normal cost of production are convertible terms. (*Ibid.*, p. 401)

steadily declining, he himself as steadily rises, every reduction in the value of existing capital being so much added to the value of the man.”¹ “The value of man, like that of all other commodities and things, is measured by the cost of reproduction, and not by that of production.”²

These statements are not in harmony with value as nature’s control over man. They indicate that value is man’s power over nature. How does this differ from wealth, man’s power over nature? How does the idea that a greater utility in man means a higher value in man harmonize with “the two (value and utility)³ thus move in opposite directions, and are always found existing in the inverse ratio of each other”?⁴ Inconsistencies such as these confuse the argument. Yet the general relationship seems to be that value is nature’s power over man and that it is limited by cost of reproduction. Wealth is man’s power over nature, utility is the measure of this power, and capital consists in the means or instruments which give this power.⁵

Since rent is a payment for the use of land, it is proportionately high or low as the value of the land is high or low. This leads us to the rent problem.

He presents two arguments on rent:⁶ (a) Land is capital, rents grow proportionately less; (b) The natural order of cultivation is from poor land to rich.

¹ *Principles of Social Science*, vol. iii, p. 111.

² *Ibid.*, p. 130

³ Parentheses mine

⁴ *Principles of Social Science*, vol. 1, p. 179.

⁵ Roscher, *Principles of Political Economy*, vol. 1, sec. 5, note 4.

⁶ *Principles of Social Science*, vol. i, p. v. Speaking of his work of 1837, Carey said of himself, “He had already satisfied himself, that the theory presented for consideration by Mr Ricardo, not being universally true, had no claim to be so considered, but it was not until ten years later that he was led to remark the fact that it was universally false.”

First. Land is capital. The clay through which the farmer guides his plow is subject to exactly the same law as when it has passed through the potter's hands and has been converted into china and earthenware. It is a universal law that governs matter.¹

"If we can show that the land heretofore appropriated is not only not worth as much labor as it has cost to produce it in its present condition, but that *it could not be reproduced by the labor that its present value would purchase*, it would be obvious to the reader that its whole value is due to that which has been applied to its improvement."² Again, "There is not, throughout the United States, a county, township, town, or city, that would sell for cost; or one whose rents are equal to the interest upon the labor and capital expended."³ Quotations and arguments from his works might extend over pages,—all to the effect that capital in land differs in no respect from that invested in machines. In fact, President Walker remarks that, "The trouble with Mr. Carey's argument is its superabundance of proof."⁴ In other words, before appropriation, land is a free good, like air and water. Its value is due to the labor employed in its appropriation and improvement.⁵ "Improvements" is broad enough to include roads, canals, churches, and the like.⁶ Land being capital, rent is only a form of interest. As progress, invention, and skill advance, the cost of reproduction declines. Therefore rents proportion-

¹ Principles of Social Science, vol 1, p 164

² Principles of Political Economy, vol 1, p 102

³ Past, Present, and Future, p 60, almost the same wording in Principles of Social Science, vol 1, p 168

⁴ Land and its Rent, p 77.

⁵ Principles of Political Economy, vol 1, pp 129, 130

⁶ Principles of Social Science, vol 1, p 168

ately decline; proportionately, of course, to the products of the land.¹

Second. The natural order of cultivation is from poor to rich soils, from the dry, sandy soil of the hill-side to the rich lands of the valley. Since this argument is aimed at Ricardo, we will give it as follows: (1) Inconsistencies of Ricardo, (2) Why Ricardian rent is generally accepted, (3) It depends on a single supposition, (4) Statement of Carey's argument, (5) Deduction: rent proportionately declines.

After an introduction replete with irony as to Ricardo's "great discovery," he turns to the college professors and compares them to the followers of Mohamet in regard to the Koran. Their insolvable task is to determine what it is they are required to believe. Those who follow Ricardo are economists *par excellence*, anything short of absolute faith in him is heresy, worthy of excommunication, contemptible. The professor "having studied carefully the works of the most eminent of the recent writers on the subject, and having found no two of them to agree, he turns, in despair, to Ricardo himself, and there he finds, in the celebrated chapter on rent, contradictions that cannot be reconciled, and a series of complications such as never before, as we believe, was found in the same number of lines. The more he studies, the more

¹ Doubtless J S Mill and F. A Walker are the strongest, at least among the strongest, critics of Carey's cost of reproduction concept. Mill omits cost of reproduction in his criticism of the point. Take this from his argument and Carey himself would not recognize it. J S Mill, *Principles of Political Economy* (Ashley ed., London and New York, 1909), pp. 430-432. See Macleod, *The History of Economics*, London [1896], pp. 590-592 on self contradiction of Mill on rent. Walker makes the stronger criticism (*Land and its Rent*, pp. 75-88). In a later work this author advocates cost of reproduction. He speaks of it as "beyond the reach of discussion" (*International Bimetallism*, N Y., 1897, pp. 25-29). Professor J. W. Jenks expressed the opinion that Carey's theory of a constant decline in value, including agricultural products, is that he had in his mind's eye the United States where, due to free and abundant fertile lands, agricultural produce had still a low cost of production (Jenks, *Henry C. Carey als Nationalökonom*, Jena, Fisher, 1885, pp. 30, 31).

he is puzzled, and the less difficulty does he find in accounting for the variety of doctrines taught by men who profess to belong to the same school, and who all agree, if in little else, in regarding the new theory of rent as the great discovery of the age."¹

Why Ricardo's Theory is generally accepted. "At first sight, it looks, however, to be exceedingly simple. Rent is said to be paid for land of the first quality, yielding one hundred quarters in return to a given quantity of labor, when it becomes necessary, with the increase of population, to cultivate land of the second quality, capable of yielding but ninety quarters in return to the same quantity of labor; and the amount of rent then paid for No. 1 is equal to the difference between their respective products. No proposition could be calculated to command more universal assent. Every man who hears it sees around him land that pays rent. He sees that that which yields forty bushels to the acre pays more rent than that which yields but thirty, and that the difference is nearly equal to the difference of product. He becomes at once a disciple of Mr. Ricardo, admitting that the reason prices are paid for the use of land is that soils are different in their qualities, when he would, at the same moment, regard it as in the highest degree absurd if any one were to undertake to prove that prices are paid for oxen because one ox is heavier than another; that rents are paid for houses because some will accommodate twenty persons and others only ten; or that all ships command freights because some ships differ from others in their capacity."²

Ricardo's whole theory is based upon a single supposition. After reducing the theory to six brief state-

¹ *Past, Present, and Future*, pp. 17-18 (quotation from p. 18).

² *Ibid* , pp 18, 19.

ments, he (Carey) says, "It will be perceived that the whole system is based upon the assertion of the existence of a single fact, *viz.*, that in the commencement of cultivation, when population is small, and land consequently abundant, the soils capable of yielding the largest return to any given quantity of labor alone are cultivated. That fact exists or it does not. If it has no existence, the system falls to the ground. That it does not exist; that it never has existed in any country whatsoever; and that it is contrary to the nature of things that it should have existed, or can exist, we propose now to show."¹

So much for Ricardo's single supposition and what Carey proposes to show. What is Carey's argument on the point? He reverses the Ricardian order of cultivation. In the first settlement of a new country Ricardo thinks that No. 1, the 40 bushels to the acre tract, would be first occupied. When population multiplies to the extent that it is necessary to cultivate No. 2, then rent begins on No. 1 — the rent being the difference between the two or 10; and so on.

In the first settlement of a new country Carey thinks that the poorest tract, say No. 5, will first be occupied, and with the growth of population and wealth 4, 3, 2, and 1 will successively come into cultivation. Carey's reasons are that the richer lands offer greater resistance than half-civilized men, or needy colonists, or the few new settlers in a virgin land with small capital and no organization, can overcome. The most fertile lands are covered with dense forests, among the most general difficulties are swamps or marshes, bogs and malaria. Through the growth of population, capital, and association such power over nature is acquired as will make possible the utilization of the most fertile soils.²

¹ *Past, Present, and Future*, p. 23.

² *Ibid.*, chap. 1, also *Principles of Social Science*, vol. 1, chaps 4, 5.

From this it follows that constantly increasing returns result, and "there is a steady diminution in the proportion of the population required for producing the means of subsistence, and as steadily an increase in the proportion that may apply themselves to producing the other comforts, conveniences, and luxuries of life."¹

Continuing, we find that, "Rent is paid for the improvements which labor has accomplished for, or on, land, and which constitute items of wealth. Wealth tends to augment with population, and the power of accumulating further wealth increases with constantly accelerating pace as new soils are brought into cultivation, each yielding in succession a larger return to labor. Rent tends, therefore, to increase in amount with the growth of wealth and population,"² etc. But while there is an increase in the amount of rent, it must be remembered that rent, or the price charged for the use of land, like prices of all commodities and things, is but compensation for the results of past labor. As cost of production becomes less, prices are lowered. Therefore, tho total rents increase, rent as a share of the produce of land decreases proportionately.³

So much for Carey's arguments on rent and the relation of rent to kindred problems. I shall conclude with a comparison of these writers, hoping thereby that Carey's attitude toward Ricardo may be better understood.

Ricardo lived in pessimistic England at the close of the Second Hundred Years' War with France;

¹ *Past, Present, and Future*, p 25

² *Ibid* , p 62.

³ *Principles of Social Science*, vol. 1, p 164

Carey lived in optimistic America during her golden age of prosperity after 1837. The first wrote in the England of 1817; the second wrote in the America of 1848. Ricardo was pessimistic — things would have been better if they had not been so bad; Carey was optimistic — things will be better because nature is so good. The first accounted for misery through the niggardliness of nature; the second accounted for misery through the fault of man. Ricardo was a free-trader; Carey was a protectionist. The Malthusian law of population and the Ricardian theory of rent rest on one and the same hypothesis; the limited supply and diminishing productiveness of land in its relation to human fecundity with undiminishing power. Carey's doctrine of population and theory of rent are based on the principle of an increasing supply of land in its relation to human fecundity, — that fecundity diminishing with the development of man. With Ricardo, labor accounts for the value of most man-made goods; with Carey, labor accounts for the value of land and other goods. Ricardo's order of cultivation was from rich land to poor; Carey's order of cultivation was from poor land to rich. Ricardo's rent concept is static; tho he taught historical diminishing returns, his formula can serve only for measuring static or unalterable conditions. Carey's rent concept is dynamic, he looks upon society as progressive, multiplying in inventions and skill and increasing its returns as it grows. Ricardo regarded land as a distinct factor of production; Carey regarded land as capital. With Ricardo, rent is a differential surplus above a no-rent margin; with Carey, rent is interest on capital in the form of land. The first thought that improvements caused a decrease in total rent; the second thought that improvements caused

an increase in total rent. Ricardo taught that rent increased while labor received less and less on a declining margin; Carey taught that rent proportionately declined while labor received proportionately more and more on a rising margin. To one increased numbers meant diminishing returns and rising rents at the expense of profits and wages; to the other increased numbers meant increasing returns and rising wages at the expense of rents and profits. Both were successful business men. Neither was a college man. Either ranked as the strongest contemporary economist of his nation. After all, the fundamental, the one point between Carey and Ricardo, in this connection, is diminishing returns. It is true that Carey said "no" when Ricardo said "yes"; Carey considered his doctrine the direct opposite of that taught by Ricardo. Differences in the order of cultivation present no fundamental distinction in this question. The philosophy of Ricardian rent refers to lands under cultivation at the same time. Recent studies justify Carey's contention in many instances as to the historic order of cultivation. Grant the point, yet Ricardo's law of rent is untouched. Not historic orders, but lands under cultivation at the same time present the basis for a differential rent doctrine.

That Carey said "no" when Ricardo said "yes" is taken by critics to be the backward and forward looking faces of the same proposition. This, however, is but another instance of the common fallacy of mistaking different things for the same thing. This I will show through a consideration of the essence of the whole controversy — diminishing returns.

Since Carey was not specific on the point, he leaves us to interpret his fundamental, possibly his subconscious philosophy of this question. In my judg-

ment there are three, and only three, possible interpretations :—

1. There is a declining demand for commodities as society approaches a more perfect association, and meanwhile there are increasing returns from land. In other words, while the supply of commodities is constantly increasing, our needs are constantly decreasing.
2. Another interpretation — and that the general one — is that Carey denied outright the law of diminishing returns as Ricardo used it.
3. Carey passed by diminishing returns in agriculture and reasoned with a land-supply concept in mind.

Regarding the first of these, Carey, after arguing for a tendency to substitute vegetable for animal foods, and for increasing powers of augmenting supplies of necessities as man approaches a more perfect state of association, said, “ The better his clothing, the less is the waste of his body, and the less his need for food.”¹ Further,² “ Look, therefore, where we may, we find, throughout nature, a constant tendency towards the perfect adaptation of the earth to the wants of a growing population — each and every increase in the power of association and combination being accompanied by diminution in the quantity of raw material required for the maintenance of human life, and increase in that which may be obtained in return to any given amount of labor.”³

Few men have been criticized more severely than Carey, yet none have been so cruel as to accuse him of being serious on this point. This does not enter in as a part of the body and substance of his philosophy.

¹ *Principles of Social Science*, vol. iii, p. 318.

² *Ibid.* , vol. iii, p. 319. Also *ibid.* , chaps. 46, 47, bear on the point.

³ Mr. Carey should have remembered that clothing and general comforts make a demand on the land as much as food does.

It must be considered alone — isolated from the body it is presumed to serve — it is a kind of philosophical comet blazing up for the moment, contrary alike to law, order, and common sense. Why did Carey compel the farmers to move to more fertile soil, if the soil they were on was constantly increasing its returns and the needs were constantly diminishing? The fact is that Carey, at this point of the discussion, has in mind a primitive economy.¹ This is no ultimate doctrine. That animals, well housed and protected from freezing weather, rains, and snow, require a less amount of food to preserve them in the same state of health and vigor is beyond discussion. That warm clothing, sanitation, and comfortable housing for people mean a less waste of body, and a somewhat less absolute need for food, is a matter of common knowledge. But at this point the analogy between men and beasts breaks. What the desires of horses and cattle were a thousand years ago, they are today. Man's desires, however, are progressive, they mount with every additional opportunity for gratification. Desires are the motive force of economic activity, and it follows that dynamic progression — the centre of Carey's philosophy — is based upon desires for more and better goods. To accuse him, then, of advocating the point beyond a primitive economy, or at least beyond the point where man has secured conveniences to conserve his animal heat, is to accuse him of contradiction so serious as to wreck his whole philosophy.

Upon the second possible interpretation much less is to be said. Ricardo limited land, labor, and capital to definite units and gave them a mathematical expression. Not to limit the land factor is, I submit,

¹ I take it that needs vary in relation to the standard of living in a primitive economy needs are absolute essentials, in an advanced economy they correspond to the character of desires.

to dodge or pass over the diminishing returns issue in the Ricardian sense. This Carey did. There is not a sentence in his hundreds of pages on rent and population which claims that constant expenditures on a limited specific area bring an ever increasing return. His was a different theme, — from poor land to fertile, which I shall term a land-supply concept. His reasoning was upon an entirely different basis. He did not preach increasing returns on a limited area of land.¹ If a farm on the hill-side showed constantly increasing returns, it would soon be more productive than the low lands. If the farmer's first expenditure, or first dose, on the limited area yields 10, his second 12, his third 15, on up to 100 and beyond, what possible excuse could he have for moving to the low lands ? There is no evidence that Carey regarded the process of moving as a particular source of large fortunes.

While Ricardo based diminishing returns upon historic conditions, his formula or his mathematical expression of it was static, and could serve only as a measure of static conditions. He assumed conditions in a given state of advancement. At the same time he recognized the Malthusian tendency of population to outstrip the means of subsistence. Thus he yoked a static with a dynamic concept. Consequently he over-emphasized the principle of resistance in agricultural industry, to the neglect of inventions in the industry as a whole. His prophecies as to resulting conditions were, consequently, extremely pessimistic. They have been falsified both in England and America.

¹ Sherwood, S., *Tendencies in American Economic Thought* (Johns Hopkins University Press. Fifteenth Series, XII) — Professor Sherwood argues to the effect that Carey did deny Ricardian diminishing returns, and, so far as I know, gives the best available argument for that contention. Professor Sherwood makes no distinction between diminishing returns on a limited area under static conditions and diminishing returns relative to the whole industry over a long period of time (Pp. 20-23) My contention is that the two are essentially different.

It was this that raised the ire of optimistic Carey. The conclusion is that the first two of these possible interpretations were not entertained by Carey. He never thought that as civilization took a higher form and became more complex our needs and demands for goods would diminish. Neither did he believe that the application of more and more units of labor and capital on a limited area would show constantly increasing returns.

Yet he preached increasing returns. This brings us to the third, and to what I believe to be the correct, interpretation of his idea of returns from land. It must not be forgotten that his thought was dynamic, his environment was one of growth and change, and in conformity his economy was dynamic. To him land was not a fixed factor in production as it was with Ricardo. The limited area concept was absent from his reasoning. Diminishing returns to him were quite different from a mere denial of diminishing returns in the static sense that Ricardo conceived it. The problem to him was a dynamic one, over a long period of time. He conceived returns in the light of growing skill, and of industrial and technical developments, that multiply with the growth of capital and population. Increasing power resulted in the better utilization of land, in the harnessing of new lands, in the substitution of richer, better lands for old lands.

Growing power to increase the land-supply or real productive power of the earth was, I submit, the central idea in Carey's reasoning on returns. This was no denial of Ricardian diminishing returns. Their problems were entirely different — static and dynamic returns are different species.

Carey's writings are on the border line, if indeed they do not suggest what I believe to be a truer state-

ment of proportionality than has been given. Recent thought, however, seems to owe more to Hobson,¹ Clark,² and Cannan³ because of their extension of the application of the rent doctrine, than to older writings on the subject. To avoid reading trains of thought into Carey which belong more to recent writers, I shall assume full responsibility for the following remarks, which, it is hoped, will present a truer statement of the difference between Ricardo and Carey.

Land, like labor, money, or tools, is a productive factor. The supply of productive factors is measured by their yield and not by their bulk. The number of laborers does not tell us the supply or productive power of labor. We must know of their skill, strength, and organization. The number of dollars does not tell us the supply of money, the value and rate of turnover of these dollars must be known. With the land-supply the case is not different. The land-supply is the available force or power to do the land work. The land-supply consists of available or effective utilities and not of potential utilities which may be harnessed in the future, or when new conditions arise. Location, fertility, and intensity of cultivation must be considered, as well as area, when reasoning on the land-supply.

Any productive agent is economically non-existent until its potential utilities become effective utilities.⁴

¹ Hobson, J. A., *The Law of the Three Rents*, Quarterly Journal of Economics, 1891, vol. v, pp. 263-288

² Clark, J. B., *Distribution as Determined by a Law of Rent*, Quarterly Journal of Economics, 1891, vol. v, pp. 289-318, *A Universal Law of Economic Variation*, Quarterly Journal of Economics, 1894, vol. viii, pp. 261 ff

³ Cannan, E., *Origin of the Law of Diminishing Returns*, 1813-15, *Economic Journal*, 1892, vol. ii, pp. 53-69

⁴ Veblen, T., *On the Nature of Capital*, Quarterly Journal of Economics, August, 1908, p. 523. Commons, J. R., says, "The gifts of nature become capital as soon as

Gold at the bottom of the sea is economically non-existent because it has only potential utility. Gold in a national bank is economically existent; it has effective utility. The effective utility of land is the supply of land; the swamp lands, in the Carey use, — all lands, under given industrial conditions, which are beyond man's control, which in no way contribute or can be made to contribute to his needs, — are economically non-existent. They are no part of the economic supply of land. No one claims that fur-bearing animals in the wilds of Siberia, beyond the reach of man, compose a part of the supply of furs. Yet their name is legion who affirm that the supply of land is fixed, thus including lands impossible of utilization under existing circumstances. The greatest enemy of some of their ideas is other of their ideas. Canals, like the Panama, that will make possible the drainage and cultivation of lands whose utility previously had not been dreamed of; railroads extending quick, cheap transportation into the interior, thus converting waste lands into corn and wheat fields; extensive systems of irrigation that banish nature's lottery of seasons and rains — these are increasing the effective utilities, the land-supply, extensively. Sub-soil plowing, — working down into the earth, building upon the soil, any means of more intensive cultivation, — any means of compelling a limited area to contribute more to the needs of man than before, is to convert potential into effective utilities — to increase the economic land-supply. This does not say that potential utilities are without influence on supply, — let the demand become stronger and force is applied to the harnessing of potential utilities. It

they are utilized by man Before they are utilized they have no economic significance, and are, therefore, neither capital nor land, in the economic use of those terms.”²²
The Distribution of Wealth, pp. 137-138.

does mean to say that potential utilities are not a part of the supply. Not to distinguish between "amount of land" and land-supply is a source of confusion.¹ More intensive and more extensive utilization result precisely in the same thing, — more effective utilities, a greater land-supply. For the economist to reason on the acre basis rather than on an effective utility basis is to shift from an economic to a physical point of view. An acre of land is an acre of land, be it on the top of Mt. McKinley or on Wall Street. What of their productivity, their value, their capitalization? These are economic questions. The acre is a mere measure, an area test, of a physical entity, — that is all.

In old or new lands, potential utilities resist being harnessed; some such utilities are further than others below the margin of utilization. This is a matter of degree, not of kind. Whether extensive or intensive, such utilities resist being harnessed. This may be termed "the principle of resistance." This brings us to a further conclusion of great significance, heretofore unnoticed, namely, that it is impossible to tie down any one agent in our reasoning on proportionality and to treat it as a limited, or definitely fixed, factor. These truths, differentiation between effective and potential utilities in determining supply and the principle of resistance, are applicable to all productive agents. They are illustrated by the discussions on the quantity theory of money. Their essence is embodied in such expressions as "The nimble six-pence does the work of the slow shilling."² "The money force, or supply of money, is . . . composed of two factors, — the amount of money and the rapidity

¹ Fetter, F. A., *The Principles of Economics* (2d ed.), N. Y., 1910, pp. 155-158.

² Walker, F. A., *Political Economy* (Adv. Course, 3d ed.), N. Y., 1888, p. 131.

of circulation.”¹ Resistance is here implied, of course, else one coin would be a national supply. The reasoning applies to horse, laborer, machine, and all productive agents, in the same way and for the same reasons that it applies to land and money.

Realizing that a product is, under complex industry, a resultant of numerous indirect agents,² and that all indirect agents are alike subject to the “principle of resistance,” it follows that “diminishing returns” is simply a law of proportionality, with no fixed factors, and that all factors are adjusted, or the attempt is to adjust them so that the maximum efficiency of production will result. Such adjustment, equilibrium, or proportionality is an industrial ideal, and all efforts to attain it are, and must be, based upon the general principle of resistance.

In America, where land was so rich and abundant, economic advancement was striving toward that economic goal—a proportionality of factors. In a new country every step approaching that proportionality is attended with larger returns than the preceding step. Such environment produces subtle and inexplicable forces that bend action and force thought into new channels. “American economists from the time of Carey have naturally thought of change and progress as normal, and have protested against the assumption of fixity of customs, in social institutions, in the land-supply, in the labor force, and in the industrial processes.”³ Now that the supply of productive agents is elastic, and that resistance must be overcome in securing more effective utilities from these agents,

¹ Walker, F. A., *Political Economy* (Adv. Course, 3d ed.), N. Y., 1888, p. 131.

² See example of the day laborer's coat Adam Smith, *op. cit.*, vol. 1, p. 13.

³ Fetter, F. A., *Publications of the American Economic Association* (3d series, vol. xi, No. 1), p. 135.

and that a product is the resultant of numerous indirect agents, it follows that the proper proportioning of these agents must be based on the principle of resistance or diminishing returns.

The entrepreneur's problem is largely one of proportionality. He must so apportion productive factors as to secure the best adjustment of means and ends. He must meet the demands of the market. This is a problem of change and progress, of living force and movement; therefore the dynamical problem of *substitution* is ever confronting him. There is the double problem in proportionality of apportioning the productive factors and of apportioning the whole establishment to the extent of the market. This, should we take the space to argue it, would lead to the conclusion that when the point of greatest net return is reached more money would not be invested in the plant. The securing and maintaining proportionality is inseparably connected with the principle of *substitution*. In fact substitution is the means to that end. Now that diminishing returns is common to all productive agents, the proper apportioning of these factors in productive enterprise must be based on this general principle of resistance; therefore the principle of substitution must work in conformity with diminishing returns.¹

In the coöperation of productive factors the ideal is to secure such an adjustment as will yield the greatest net return. More of a single factor than the ideal proportion demands is unnecessary cost. Less of a single factor than a proper apportionment demands indicates unnecessary cost on the part of the other factors in the coöperation. Disproportionality means

¹ See Marshall on the relationship of the principle of substitution to diminishing returns. *Principles*, pp. 355-356, 435.

diminishing returns, substitutions or readjustments that bring about or approach true proportionality will augment returns. Whether long factors will be substituted for short, or the reverse, is a question partly of anticipated value return and partly of the comparative productive monopoly held by particular factors. For the above reasons long factors will not be increased. This would disobey the law of demand which tends to equalize marginal utilities, and would be unwise investment. In a productive establishment land, labor, and capital are coördinated and each employs the others, so to say. Also various competing uses are demanding each of these factors. A short factor cannot bid strongly enough to cause an increase of factors which are already too strong in the same establishment. If it could, it must be stronger than any competing use, but this would involve the absurdity that all competing uses are subject to still greater diminishing returns than itself. In a purely agricultural society where land, labor, and capital are devoted almost exclusively to agriculture, the range of substitution is comparatively limited. Alternate demands are few. Land in a particular location gradually becomes the short factor as labor and capital are increased. The demand for adjustment increases with the growth of disproportionality. Substitution must be made, but in the very nature of the case the long factors — labor and capital — cannot be adjusted to the short factor — land. Land must be adjusted to the other two. It is very evident that substitution is made because of diminishing returns on a limited area. Should we assume long factors to be adjusted to a short factor, it is still true that the purpose and act of substitution is based on diminishing returns. Movement from poor land to rich is substitution

based on the land-supply concept. Such substitution confirms diminishing returns on a limited area.¹

We conclude that the supply of the productive powers of factors or their effective utilities is elastic, that resistance must be overcome in the conversion of potential into effective utilities, and that the problem of disproportionality arises out of differences in the degree of resistance to be overcome in apportioning factors, or in increasing the supply of short factors. Substitution by avoiding greatest resistance seeks the easiest means of increasing supply. To advocate the law of substitution in production, except in cases of indifference, is logically to affirm diminishing returns. The substitution of new lands for old, or the use of new lands rather than a more intensive utilization of old lands, as population and capital grow, is based on the law of diminishing returns.

To attain superior adjustment of means and ends is, consciously or subconsciously, the ambition of all business concerns. It is the aim of all economies. This being true, the very fact that land was the short factor in the England of 1817 and the long factor in the America of 1848, helps us to account for these different economies.

With the law of substitution in mind, of which Carey made so much, I hope we are ready to state the difference between Ricardo and Carey on returns. In conformity with English conditions and with the thought of Malthus and especially Sir Edward West, we find that Ricardo's concept of diminishing returns,

¹ In fact this law of substitution simply pervades Carey's whole economy. Power over nature grows with the substitution of improved instrumentalities, from the use of the pack-saddle to the railroad car, from the canoe to the steamer, from the poorer to the richer soils, from animal to vegetable products, from the vegetable to the mineral kingdom, — at every stage substituting the cheap and abundant for the costly and scarce, thus progress is exhibited in the steady advancement from savagism up to the highest attained civilization (See Dr. William Elder, *A Memoir of Henry C. Carey*, Philadelphia, 1880, p. 9) These are of his most common expressions.

his statement of it, and his mathematical expression of it, were static, and were confined to a limited area.

In conformity with rapidly changing conditions in the United States, and with his own way of thinking, Carey's concept of returns was dynamic. He thought of returns over a long period of time and without limit as to area. Taking this view of the question only false reasoning could lead him to any other conclusion than that returns from land would increase with the growth of skill and science, of population and wealth.

Static diminishing returns and dynamic increasing returns have little or nothing in common. They are different species. To affirm the one is in no sense to deny the other.¹

We are brought to the interesting question, Did Carey deny Ricardo's concept? We might answer that he had nothing to say on a static concept of returns relative to a limited area. Seemingly he misunderstood what it was that Ricardo taught. In the absence of a specific statement, however, his teaching, as we believe, would rather confirm than deny the Ricardian concept. If not, why did he think that population would become too dense? This was his opinion in 1848 before he had found a check to over-population. Why did he look for the relief of over-population in the harnessing of new lands? Above all, the law of substitution was a salient feature of his economy. This law was so prominent that Dr. Elder spoke of it as a leading feature of Carey's writings.

In Ricardian usage land, labor, and capital were the productive factors. The essence of the problem confronting Ricardo was the disproportionality of these factors. Land ("being fixed") grew proportionately shorter with the increase of labor and capital. This

¹ Marshall, *op. cit.*, p. 165.

is to say, it showed diminishing returns. Of course returns are reckoned relative to the whole investment, tho in Ricardo's mind land was the particular source of increasing costs.

Also the problem confronting Carey was one of disproportionality. Briefly, what were his views? Population first settles on the poor land. Capital and labor increase until land becomes the short factor. Meanwhile increased strength enables them to appropriate a more fertile tract. After a time this becomes the short factor and so on until the most fertile tract is reached. Every movement is based on the principle of diminishing returns.

We conclude that the views of these two famous economists were not opposite views of the same thing. Their economics were upon different bases; two different economics from two different premises of fact and viewpoint; the one was an outgrowth of industrial and social conditions in the England of 1817; the other was an outgrowth of industrial and social conditions in the America of 1848.¹ Ricardo's diminishing returns and Carey's land-supply concept are both essential to a true law of diminishing returns.

The reason for the common opinion that Carey denied diminishing returns in the Ricardian sense is, I believe, that critics have made the common shift from static conditions on a limited, specific area to dynamic conditions covering the whole industry over a long period of time. Taking the latter, which is an entirely different problem, Carey was right. Looking either backward or forward, to the past or to the future, the whole industry, in the historical sense, shows increasing returns. Other reasons are that only effective utilities compose the land-supply or the supply

¹ Gide and Rist, *Histoire des Doctrines Économiques*, Paris, 1909, pp. 388-389

of any factor. These compose the force, the available power to perform the functions of productive factors. Proportionality is worked out upon this principle, but in all adjustments tending toward proportionality, the law of substitution is assumed; it is the means to that end. This law, in turn, is generally based on diminishing returns. Therefore, having shown at length, that Carey's contention was for substitution for the short factor, — land, we have shown that, in reality, he confirms diminishing returns, tho he nowhere specifically mentions that law in the sense that Ricardo used it.

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